

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims**

1. (currently amended) A vacuum arc source including a target with a surface for operating an arc discharge, wherein the target is arranged in ~~the~~an effective area of a device ~~for~~ producing a magnetic field, ~~characterized by the fact that the~~ said device ~~for~~ producing the magnetic field ~~is comprised of comprising~~ at least two magnet systems with opposite poles and ~~is~~ being designed so that the component  $B_{\perp}$  of the magnetic field perpendicular to the surface has basically constant values ~~smaller than 30 Gauss over the greater part of the surface or is zero over a greater part of the surface.~~
2. (currently amended) The arc source in Claim 1, ~~characterized by the fact that~~ the value of the perpendicular magnetic field component  $B_{\perp}$  ~~is being~~ smaller than 20 and preferably ~~smaller than 10-30~~ Gauss.
3. (currently amended) The arc source in ~~one of the preceding claims, characterized by the fact that~~ claim 1, wherein the greater part of the surface extends from the middle of the target surface to the rim, and so that the greater part includes at least 50%, ~~especially preferred 60% or more~~ of the geometrically determining mass or masses of the target surface.
4. (currently amended) The arc source in ~~one of the preceding claims, characterized by the fact that~~ claim 1, wherein on the rim of the target surface, the values  $B_{\perp R}$  of the perpendicular magnetic field component rise, fall and/or change signs compared to the values  $B_{\perp M}$  of said field in the middle of the target surface.
5. (currently amended) The arc source in ~~one of the preceding claims, characterized by the fact that~~ claim 1, wherein the value of the parallel magnetic field component  $B_{\parallel}$  is basically zero in the middle and rises linearly in the direction of the rim of the target surface ~~rises or falls,~~

~~preferably symmetrically in relation to the middle of the target, especially preferred basically rises linearly.~~

6. (currently amended) The arc source in ~~one of the preceding claims, characterized by the fact that the~~ claim 1, wherein a first of the at least two magnet systems with opposite poles includes at least one first electromagnetic coil placed behind the target.

7. (currently amended) The arc source in claim 6, ~~characterized by the fact that the inner dimensions of the first coil having inner dimensions that~~ basically coincide with a deviation from a maximum of plus/minus 30%, ~~preferably plus/minus 20%~~ with ~~the~~ a projection of the outer dimensions of the surface.

8. (currently amended) The arc source in ~~one of claims 1 to 5, characterized by the fact that the~~ a first of the at least two magnet systems with opposite poles ~~is comprised of~~ comprising one or more permanent magnets placed behind the target.

9. (currently amended) The arc source in claim 8, ~~characterized by the fact that the said one or more permanent magnet or magnets themselves have~~ having low field strength, or ~~have~~ having a distance from the target such that the field strength on the surface of the target is low.

10. (currently amended) The arc source in ~~one of the preceding claims, characterized by the fact that the~~ claim 6, wherein a second of the at least two magnet systems with opposite poles has at least one second coil arranged coaxially to the first magnet system.

11. (currently amended) The arc source in claim 10, ~~characterized by the fact that the second coil is~~ being placed behind the first magnet system.

12. (currently amended) The arc source in claim 10, ~~characterized by the fact that the second coil is~~ being placed at some distance in front of the target.

13. (currently amended) The arc source in claim 10, ~~characterized by the fact that~~  
wherein the second coil includes the first magnet system at least partly coaxially.

14. (currently amended) The arc source in ~~one of claims 10 to 13, characterized by the~~  
~~fact that~~ the second coil ~~has~~ having a higher number of windings and/or a larger diameter than  
the first coil.

15. (currently amended) The arc source in ~~one of the preceding claims, characterized by~~  
~~the fact that~~ claim 1, the target is being connected as a cathode.

16. (currently amended) The arc source in ~~one of the preceding claims, characterized by~~  
~~the fact that~~ claim 1, the target is being connected as an anode.

17. (withdrawn-currently amended) A vacuum system comprising in which at least one  
arc source ~~is arranged~~ according to claim 1 or 10~~one of Claims 1 to 16~~.

18. (withdrawn-currently amended) The system in Claim 17, ~~characterized by the fact~~  
~~that the~~ wherein said at least one arc source works in the direction of the axis of the system and  
has at least one other electromagnetic coil arranged concentrically to the axis of the system in  
order to deflect the plasma beam produced.

19. (withdrawn-currently amended) The system in Claim 18, ~~characterized by the fact~~  
~~that~~ wherein the at least one other coil is connected to at least one time-altered current source  
with a control unit, in order to deflect the alignment of the plasma beam produced by the at least  
one arc source variably.

20. (withdrawn-currently amended) The system in ~~one of Claims 18 to 19, characterized~~  
~~by the fact that~~ claim 17, wherein at least two other electromagnetic coils, ~~preferably in the~~  
~~upper and lower or corresponding areas laterally bordering~~ the system are arranged

concentrically to the axis of the system and have a different or the same diameter or a design basically corresponding to a Helmholtz coil arrangement.

21. (withdrawn-currently amended) A method of operating an arc discharge on the a target surface of an arc source ~~using a device producing a magnetic field, characterized by the fact that, wherein~~ a magnetic field is produced on the surface with the device for producing a magnetic field from at least two magnetic systems with opposite poles, so that ~~its the~~ the perpendicular component  $B_{\perp}$  of the magnetic field runs over the a greater part of the surface basically constantly ~~near or at or~~ is zero.

22. (withdrawn-currently amended) The method in Claim 21, ~~characterized by the fact that the value  $B_{\perp}$  of the perpendicular magnetic field component is set to be~~ being smaller than 30, ~~preferably smaller than 20 and more preferably smaller than 10~~ Gauss.

23. (withdrawn-currently amended) The method in ~~one of Claims 21 to 22, characterized by the fact that claim 21, the magnetic field is being~~ set so that the greater part of the surface with component  $B_{\perp}$  running basically constantly near or at zero extends from the middle of the target surface to the rim, so that the middle includes at least 50%, ~~especially preferred 60% or more,~~ of the geometrically determining mass or masses of the target surface.

24. (withdrawn-currently amended) The method in ~~one of Claims 21 to 23, characterized by the fact that, the values  $B_{\perp R}$  on the rim of the target surface of the perpendicular magnetic field components are set to rise, fall and/or change signs compared to the values  $B_{\perp M}$  of the magnetic field~~ in the middle of the target surface.

25. (withdrawn-currently amended) The method in ~~one of Claims 21 to 24, characterized by the fact that~~ the value of the parallel magnetic field component  $B_{\parallel}$  is basically set at zero in the middle and rises in the direction of the rim of the target surface ~~rises, preferably~~ symmetrically in relation to the middle of the target, so that the force acting tangentially on the

spark clockwise or counter-clockwise rises toward the rim of the target.

26. (withdrawn-currently amended) The method in ~~one of claims 21 to 24, characterized by the fact that~~ a magnetic field basically perpendicular to the surface is also produced in an area in front of the target.

27. (withdrawn-currently amended) The method in ~~one of claims 21 to 26, characterized by the fact that~~ the magnetic field strength is set to correspond to the target material and/or target thickness.

28. (withdrawn-currently amended) The method in ~~one of claims 21 to 27, characterized by the fact that~~ the device producing the magnetic field ~~includes comprising~~ at least one coil placed behind the target, and a voltage source ~~is~~ applied to ~~the~~ at least one coil to adjust the magnetic field, so that current flows in ~~the~~a first direction.

29. (withdrawn-currently amended) The method in ~~one of claims 21 to 27, characterized by the fact that~~ the device for producing the magnetic field ~~has comprising~~ at least one magnet system made up of one or more permanent magnets placed behind the target.

30. (withdrawn-currently amended) The method in ~~one of claims 28 to 29, characterized by the fact that~~ said device further comprising at least one second coil ~~is~~ placed behind, in front or around the target, wherein ~~and~~ to adjust the magnetic field, a voltage is applied to the second coil, so that a second magnetic field is produced that is directed opposite the magnetic field produced by the first magnet system.

31. (withdrawn-currently amended) A method of coating a workpiece, ~~especially a tool and/or a component,~~ using one of the methods in claims ~~20 to 29~~30.

32. (canceled)

33. (new) The arc source in claim 1, the value of the perpendicular magnetic field component  $B^\perp$  being smaller than 10 Gauss over the greater part of said surface.

34. (new) The arc source in claim 3, said greater part includes at least 60% of the geometrically determining mass or masses of the target surface.